



OIPE

RAW SEQUENCE LISTING

DATE: 08/21/2002

PATENT APPLICATION: US/09/992,430B

TIME: 15:23:22

Input Set : A:\00-1237A.ST25.txt

Output Set: N:\CRF4\08212002\I992430B.raw

p.6

C--> 3 <110> APPLICANT: Rajgarhia, Vineet
 5 <120> TITLE OF INVENTION: Methods and materials for synthesis of organic products
 7 <130> FILE REFERENCE: 00-1237-A
 9 <140> CURRENT APPLICATION NUMBER: 09/992,430B
 10 <141> CURRENT FILING DATE: 2002-08-15
 12 <150> PRIOR APPLICATION NUMBER: 60/252,541
 13 <151> PRIOR FILING DATE: 2000-11-22
 15 <160> NUMBER OF SEQ ID NOS: 65
 17 <170> SOFTWARE: PatentIn version 3.1
 19 <210> SEQ ID NO: 1
 20 <211> LENGTH: 92
 21 <212> TYPE: DNA
 22 <213> ORGANISM: artificial sequence
 24 <220> FEATURE:
 25 <223> OTHER INFORMATION: multiple cloning site
 27 <220> FEATURE:
 28 <221> NAME/KEY: misc_feature
 29 <223> OTHER INFORMATION: multiple cloning site
 32 <400> SEQUENCE: 1
 33 cccaagcttg aattcccccgg gggatccctg cagggtacca cgcgtagatc tactagtgcg 60
 35 gccgcctcga gtctagaggg cccaagcttg gg 92
 38 <210> SEQ ID NO: 2
 39 <211> LENGTH: 91
 40 <212> TYPE: DNA
 41 <213> ORGANISM: artificial sequence
 43 <220> FEATURE:
 44 <223> OTHER INFORMATION: multiple cloning site
 46 <220> FEATURE:
 47 <221> NAME/KEY: misc_feature
 48 <223> OTHER INFORMATION: multiple cloning site
 51 <400> SEQUENCE: 2
 52 ccaagcttgg gccctctaga ctcgaggcgg ccgcactagt agatctacgc gtggtaccct 60
 54 gcagggatcc cccggggaat tcaagcttgg g 91
 57 <210> SEQ ID NO: 3
 58 <211> LENGTH: 31
 59 <212> TYPE: DNA
 60 <213> ORGANISM: Lactobacillus helveticus
 62 <400> SEQUENCE: 3
 63 ccgggatcca tggcaagaga ggaaaaacct c 31
 66 <210> SEQ ID NO: 4
 67 <211> LENGTH: 32
 68 <212> TYPE: DNA
 69 <213> ORGANISM: Lactobacillus helveticus

ENTERED

RAW SEQUENCE LISTING

DATE: 08/21/2002

PATENT APPLICATION: US/09/992,430B

TIME: 15:23:22

Input Set : A:\00-1237A.ST25.txt

Output Set: N:\CRF4\08212002\I992430B.raw

```

71 <400> SEQUENCE: 4
72 ccaagatctt tattgacgaa ccttaacgcc ag 32
75 <210> SEQ ID NO: 5
76 <211> LENGTH: 37
77 <212> TYPE: DNA
78 <213> ORGANISM: Pediococcus acidilactici
80 <400> SEQUENCE: 5
81 ccgggatcca tgtctaatat tcaaaatcat caaaaag 37
84 <210> SEQ ID NO: 6
85 <211> LENGTH: 33
86 <212> TYPE: DNA
87 <213> ORGANISM: Pediococcus acidilactici
89 <400> SEQUENCE: 6
90 ccaagatctt tatttgtctt gtttttcagc aag 33
93 <210> SEQ ID NO: 7
94 <211> LENGTH: 82
95 <212> TYPE: DNA
96 <213> ORGANISM: Kluyveromyces marxianus
98 <400> SEQUENCE: 7
99 taaacagtac aatcgcaaag aaaagctcca cacccaaacc aaataattgc aatgcaactt 60
101 cttttctttt tttttctttt ct 82
104 <210> SEQ ID NO: 8
105 <211> LENGTH: 79
106 <212> TYPE: DNA
107 <213> ORGANISM: Kluyveromyces marxianus
109 <400> SEQUENCE: 8
110 ttataaaatc attaaaatcc aaaatcgtaa tttatctctt tatcctctcc ctctctacat 60
112 gccggtagag gtgtgggtca 79
115 <210> SEQ ID NO: 9
116 <211> LENGTH: 1736
117 <212> TYPE: DNA
118 <213> ORGANISM: kanamycin resistance gene
120 <400> SEQUENCE: 9
121 gtacaacttg agcaagttgt cgatcagctc ctcaaattgg tcctctgtaa cggatgactc 60
123 aacttgcaca ttaacttgaa gctcagtcga ttgagtgaac ttgatcaggt tgtgcagctg 120
125 gtcagcagca tagggaaaca cggcttttcc taccaaaactc aaggaattat caaactctgc 180
127 aacacttgcg tatgcaggta gcaagggaaa tgtcatactt gaagtcggac agtgagtgta 240
129 gtcttgagaa attctgaagc cgtattttta ttatcagtga gtcagtcac aggagatcct 300
131 ctacgccgga cgcacgtgg cgcacctgca gggggggggg gggcgctgag gtctgcctcg 360
133 tgaagaaggt gttgctgact cataccaggc ctgaatgcc ccatcatcca gccagaaagt 420
135 gagggagcca cggttgatga gagctttgtt gtaggtggac cagttgggtga ttttgaactt 480
137 ttgctttgcc acggaacggt ctgctgtgtc gggaagatgc gtgatctgat ccttcaactc 540
139 agcaaaaagt cgatttattc aacaaagccg ccgtcccgtc aagtcagcgt aatgctctgc 600
141 cagtgttaca accaattaac caattctgat tagaaaaact catcgagcat caaatgaaac 660
143 tgcaatttat tcatatcagg attatcaata ccatattttt gaaaaagccg tttctgtaat 720
145 gaaggagaaa actcaccgag gcagttccat aggatggcaa gatcctggta tcgggtctgcg 780
147 attccgactc gtccaacatc aatacaacct ttaatttccc ctcgtaaaaa ataaggttat 840
149 caagtgagaa atcaccatga gtgacgactg aatccggtga gaatggcaaa agcttatgca 900
151 ttctttccag acttgttcaa caggccagcc attacgctcg tcatcaaaat cactcgcac 960

```

RAW SEQUENCE LISTING

DATE: 08/21/2002

PATENT APPLICATION: US/09/992,430B

TIME: 15:23:22

Input Set : A:\00-1237A.ST25.txt

Output Set: N:\CRF4\08212002\I992430B.raw

```

153 aaccaaaccg ttattcattc gtgattgcgc ctgagcgcga cgaaatacgc gatcgctggt 1020
155 aaaaggacaa ttacaaacag gaatcgaatg caaccggcgc aggaacactg ccagcgcacg 1080
157 aacaatattt tcacctgaat caggatattc ttctaatacc tggaaatgctg ttttcccggg 1140
159 gatcgcagtg gtgagtaacc atgcatcatc aggagtacgg ataaaatgct tgatggctcg 1200
161 aagaggcata aattccgtca gccagtttag tctgaccatc tcatctgtaa catcattggc 1260
163 aacgctacct ttgccatggt tcagaaacaa ctctggcgca tcgggcttcc catacaatcg 1320
165 atagattgtc gcacctgatt gcccgacatt atcgcgagcc catttatacc catataaatc 1380
167 agcatccatg ttggaattta atcgcggcct cgagcaagac gtttcccgtt gaatatggct 1440
169 cataacaccc cttgtattac tgtttatgta agcagacagt tttattgttc atgatgatg 1500
171 atttttatct tgtgcaatgt aacatcagag attttgagac acaacgtggc tttccccccc 1560
173 cccctgacg gtgcggcatc cggcgccac aggtgcgggt gctggcgccg atatcgccga 1620
175 catcaccgat ggggaagatc gggctcgcca cttcgggctc atgagcgctt gtttcggcgt 1680
177 gggatatgtg gcaggccccg tggccggggg actggtgggc gccatctcct tgcattg 1736
180 <210> SEQ ID NO: 10
181 <211> LENGTH: 372
182 <212> TYPE: DNA
183 <213> ORGANISM: Kluyveromyces marxianus
185 <400> SEQUENCE: 10
186 ccggttcttt ctcttactct tacaagacca agaacattgt cgaattccac tccgactaca 60
188 tcaaggtcag aaacgccact ttcccagggtg tccaaatgaa gttcgtcttg caaaagttgt 120
190 tgaccaaggt caaggatgct gctaagggtt acaagccagt tccagttcct cacgctccaa 180
192 gagacaacaa gccagttgct gactctactc cattgaagca agaatgggtc tggactcaag 240
194 tcggttaagtt cctacaagaa ggtgatgttg ttctaactga aaccggtagc tccgctttcg 300
196 gtatcaacca aaccacttc ccaaagaca cctacggtat ctcccaagtc ttgtgggggt 360
198 ccattgggtt ca 372
201 <210> SEQ ID NO: 11
202 <211> LENGTH: 747
203 <212> TYPE: DNA
204 <213> ORGANISM: Kluyveromyces thermotolerans
206 <400> SEQUENCE: 11
207 ttaccactgt cttcgggtctg ccagggtgact tcaatctgcg tctggtggac gagatctacg 60
209 aggtcgaggg tatgagatgg gccggtaact gtaacgagtt gaacgcttct tacgctgcgc 120
211 acgcttacgc cagaatcaag ggtatgtcct gtttgatcac cacttcgggt gtccgtgagt 180
213 tgtccgcttt gaacgggtatc gccgggttctt acgctgagca cgtcgggtgc ttgcacattg 240
215 tcggtgtccc atccgtctcc gccagggcca agcagctatt gttgcaccac accttgggta 300
217 acggtgactt cactgtcttc cacagaatgt ccgccaacat ctctgagacc actgctatga 360
219 tcaactgatct agctaccgcc ccatctgaga tcgacagatg tatcagaacc acctacatta 420
221 gacagagacc tgtctacttg ggtttgccat ctaacttcgt tgaccagatg gtcccagcct 480
223 ctctattgga caccccaatt gacttggcct tgaagccaaa cgaccagcag gctgaggagg 540
225 aggtcatctc tactttgttg gagatgatca aggaocgtaa gaaccagtc atcttggctg 600
227 acgcttgccg ttccagacac gatgtcaagg ctgagaccaa gaagttgatt gacatcactc 660
229 agttcccatc ttctgttacc ccaatgggta agggttccat tgacgagaag cacccaagat 720
231 tcggtggtgt ctacgtcggt accttgt 747
234 <210> SEQ ID NO: 12
235 <211> LENGTH: 1738
236 <212> TYPE: DNA
237 <213> ORGANISM: kanamycin resistance gene fragment
239 <400> SEQUENCE: 12
240 gtacaacttg agcaagttgt cgatcagctc ctcaaattgg tcctctgtaa cggatgactc 60

```

RAW SEQUENCE LISTING

DATE: 08/21/2002

PATENT APPLICATION: US/09/992,430B

TIME: 15:23:22

Input Set : A:\00-1237A.ST25.txt

Output Set: N:\CRF4\08212002\I992430B.raw

```

242 aacttgcaca ttaacttgaa gctcagtcga ttgagtgaac ttgatcaggt tgtgcagctg 120
244 gtcagcagca taggggaaaca cggcttttcc taccaaactc aaggaattat caaactctgc 180
246 aacacttgcg tatgcaggta gcaagggaaa tgtcatactt gaagtcggac agtgagtgtg 240
248 gtcttgagaa attctgaagc cgtattttta ttatcagtga gtcagtcatc aggagatcct 300
250 ctacgccgga cgcacgtgg cgcacctgca gggggggggg gggcgctgag gtctgcctcg 360
252 tgaagaaggt gttgctgact cataccaggc ctgaatcgcc ccatcatcca gccagaaagt 420
254 gagggagcca cggttgatga gagctttgtt gtaggtggac cagtttgtga ttttgaactt 480
256 ttgctttgcc acggaacggt ctgcgttgtc gggaagatgc gtgatctgat ccttcaactc 540
258 agcaaaagtt cgatttattc aacaaagccg ccgtcccgtc aagtcagcgt aatgctctgc 600
260 cagtgttaca accaattaac caattctgat tagaaaaact catcgagcat caaatgaaac 660
262 tgcaatttat tcatatcagg attatcaata ccatattttt gaaaaagccg tttctgtaat 720
264 gaaggagaaa actcaccgag gcagttccat aggatggcaa gatcctggta tcgggtctgcg 780
266 attccgactc gtccaacatc aatacaacct attaatttcc cctcgtcaaa aataagggtta 840
268 tcaagtgaga aatcaccatg agtgacgact gaatccggtg agaatggcaa aagcttatgc 900
270 atttctttcc agacttgttc aacaggccag ccattacgct cgtcatcaaa atcactcgca 960
272 tcaaccaaac cgttattcat tcgtgattgc gctgagcga gacgaaatac gcgatcgctg 1020
274 ttaaaaggac aattacaaac aggaatcgaa tgcaaccggc gcaggaacac tgccagcgca 1080
276 tcaacaatat ttacacctga atcaggatat tcttctaata cctggaatgc tgttttcccg 1140
278 gggatcgagcag tggtagtaaa ccatgcatca tcaggagtac ggataaaatg ctgatgggtc 1200
280 ggaagaggca taaattccgt cagccagttt agtctgacca tctcatctgt aacatcattg 1260
282 gcaacgctac ctttgccatg tttcagaaac aactctggcg catcgggctt cccatacaat 1320
284 cgatagattg tcgcacctga ttgcccagca ttatcgcgag cccatttata cccatataaa 1380
286 tcagcatcca tgttggaatt taatcgcggc ctcgagcaag acgtttcccg ttgaatatgg 1440
288 ctcataacac cccttgattt actgtttatg taagcagaca gttttattgt tcatgatgat 1500
290 atatttttat cttgtgcaat gtaacatcag agattttgag acacaacgtg gctttccccc 1560
292 cccccctgc aggtcgcat caccggcgcc acaggtgcgg ttgctggcgc ctatatcgcc 1620
294 gacatcaccg atggggaaga tcgggctcgc cacttcgggc tcatgagcgc ttgtttcggc 1680
296 gtgggtatgg tggcaggccc cgtggccggg ggactgttgg gcgccatctc cttgcatg 1738

```

299 <210> SEQ ID NO: 13

300 <211> LENGTH: 17

301 <212> TYPE: DNA

302 <213> ORGANISM: artificial sequence

304 <220> FEATURE:

305 <223> OTHER INFORMATION: degenerate amplification primer

307 <220> FEATURE:

308 <221> NAME/KEY: misc_feature

309 <222> LOCATION: (1)..(17)

310 <223> OTHER INFORMATION: degenerate amplification primers

313 <400> SEQUENCE: 13

314 gtbatygyt chggtac

17

317 <210> SEQ ID NO: 14

318 <211> LENGTH: 17

319 <212> TYPE: DNA

320 <213> ORGANISM: artificial sequence

322 <220> FEATURE:

323 <223> OTHER INFORMATION: degenerate amplification primer

325 <220> FEATURE:

326 <221> NAME/KEY: misc_feature

327 <222> LOCATION: (1)..(17)

RAW SEQUENCE LISTING

DATE: 08/21/2002

PATENT APPLICATION: US/09/992,430B

TIME: 15:23:22

Input Set : A:\00-1237A.ST25.txt

Output Set: N:\CRF4\08212002\I992430B.raw

```

328 <223> OTHER INFORMATION: degenerate amplification primers
331 <400> SEQUENCE: 14
332 swrtcdccrt gytacc 17
335 <210> SEQ ID NO: 15
336 <211> LENGTH: 22
337 <212> TYPE: DNA
338 <213> ORGANISM: artificial sequence
340 <220> FEATURE:
341 <223> OTHER INFORMATION: amplification primer
343 <220> FEATURE:
344 <221> NAME/KEY: misc_feature
345 <222> LOCATION: (1)..(22)
346 <223> OTHER INFORMATION: amplification primer
349 <400> SEQUENCE: 15
350 gtacagttct ggatactgct cg 22
353 <210> SEQ ID NO: 16
354 <211> LENGTH: 18
355 <212> TYPE: DNA
356 <213> ORGANISM: artificial sequence
358 <220> FEATURE:
359 <223> OTHER INFORMATION: amplification primer
361 <220> FEATURE:
362 <221> NAME/KEY: misc_feature
363 <222> LOCATION: (1)..(18)
364 <223> OTHER INFORMATION: amplification primers
367 <400> SEQUENCE: 16
368 acaggcatcg atgctgtc 18
371 <210> SEQ ID NO: 17
372 <211> LENGTH: 19
373 <212> TYPE: DNA
374 <213> ORGANISM: Kluyveromyces thermotolerans
376 <400> SEQUENCE: 17
377 gtgatgtcgg cgatatagg 19
380 <210> SEQ ID NO: 18
381 <211> LENGTH: 21
382 <212> TYPE: DNA
383 <213> ORGANISM: Kluyveromyces thermotolerans
385 <400> SEQUENCE: 18
386 ctacttgag ccactatcga c 21
389 <210> SEQ ID NO: 19
390 <211> LENGTH: 21
391 <212> TYPE: DNA
392 <213> ORGANISM: Kluyveromyces thermotolerans
394 <400> SEQUENCE: 19
395 gatctcctgc taagctcttg c 21
398 <210> SEQ ID NO: 20
399 <211> LENGTH: 20
400 <212> TYPE: DNA
401 <213> ORGANISM: Kluyveromyces thermotolerans

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/09/992,430B

DATE: 08/21/2002
TIME: 15:23:23

Input Set : A:\00-1237A.ST25.txt
Output Set: N:\CRF4\08212002\I992430B.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:55; N Pos. 21,33